

NOTES

THE death is announced, at a venerable age, of Sir Thomas Maclear, F.R.S., formerly Astronomer-Royal at the Cape. We hope to be able to give a brief notice of his life and work in our next number.

At a recent meeting of the Local Committee of the British Association Mr. Harold Thomas and Mr. W. K. Marples, the secretaries of the special committee for arranging the excursions, gave explanations concerning the proposed visits to twenty different places of interest in the district, including Chatsworth, Wentworth, Castleton, Cresswell Crags, Roche Abbey, Sandbeck, Welbeck, Thoresby, Matlock, Arbelow, Stanton-in-the-Peak, Conisborough, Haddon, Hardwick Hall, Bolsover, Wharnccliffe, Stainborough, Beauchief Abbey and Beauchief Hall, Wingfield Manor, Bradfield, &c. At Arbelow, Sir John Lubbock is to give a lecture on the Druidical remains, which are a source of so much interest to antiquarians visiting that quarter. It was stated that Prof. E. Ray Lankester, F.R.S., had been appointed by the Association to take the place of the Rev. Mr. Dallinger, who is ill, as one of the lecturers for the meetings, and will deliver his lecture at the Albert Hall at 8.30 on Monday evening, August 25, his subject being "Degeneration." Among those who have already signified their intention of being present are Major Serpa Pinto, M. Daubrée, President of the Academy of Sciences, Paris; Prof. Zirkel, Professor of Geology, &c., Leipzig. There have also accepted the invitation to the Sheffield meeting the following, amongst others:—L'Abbé Renard, Keeper of Minerals of Royal Museum, Brussels; Prof. H. A. Newton, Yale College, N.H.; Dr. Willner and Madame Willner; Dr. Janssen, M. Veth, Leyden, Holland (a traveller in Sumatra); Lieut. Wyse, of the French Navy, and Madame Wyse.

IF any of our readers are within hail of Baden-Baden about the middle of September, they should not fail to pay it a visit some time between the 18th and 24th. The German "Naturforscher," we are sure, will give them a genuine welcome, and they will get a lesson worth learning of how an association of many hundreds from the cream of German science can as a united body combine the severest work with play so hearty as almost to approach "high jinks." In sections and out of sections the German *savants* meet as a body, work as a body, and enjoy themselves as a body. On the morning of September 18, for example, you can listen to Prof. Hermann, of Zurich, lecturing on the acquisitions of physiology in the last forty years, or to Prof. Hirschfeld, of Dresden, on mimic movements of the countenance from a Darwinian point of view, and in the afternoon listen to the military band at the foot of the old castle, finishing off at the theatre in the evening. On Saturday Dr. Nachtigal is to lecture, while the evening is to be devoted to dancing. Sunday is the great day for excursions, while Monday and Tuesday are devoted to sectional work, with fireworks, theatre, and concerts in the evenings. The session finishes on September 24, with, among other things, a lecture on food adulteration, by Dr. Skalweit, of Hanover.

THE biennial meeting of the International Astronomische Gesellschaft will take place at Berlin on September 5-8 next. Prof. Förster, director of the Royal Observatory, will, on application, give more detailed information.

IMMEDIATELY after the meeting of the German Association at Baden-Baden on September 14-24, the German Geological Society will hold its general meeting at the same place, viz., on September 25-28.

THE forty-seventh annual meeting of the British Medical

Association was opened at Cork on Tuesday, Prof. O'Connor, of Queen's College, Cork, being president.

THE Cameron Prize, recently founded in Edinburgh University by the late Dr. A. R. Cameron, of New South Wales, "for the most important addition to Practical Therapeutics in the past year," has been awarded to Dr. Paul Bert, Professor in the Faculty of Sciences, Paris, for his researches extending over a series of years and summarised in his work entitled "*La Pression Barométrique; Recherches de Physiologie Expérimentale*" (Paris, 1878).

MR. TEGETMEIER, we understand, lends his aid as regards press-work of the reprints to be issued by the newly established Willughby Society, which could not have a more efficient director, as the fidelity of his reproduction of Moore's *Columbarium* and Boddaert's *Table* is enough to prove.

ON the morning of Sunday, August 3, a little before two o'clock A.M., the Royal Gardens at Kew were devastated by a hailstorm, which in the space of about ten minutes inflicted more damage than the Gardens have sustained since their existence as a national institution. After a rapid survey of the houses the following day, it was found that the number of broken squares of glass could not be estimated at less than 16,000. In the great temperate house alone 3,000 squares were shattered. The storm, which was accompanied by violent thunder and lightning, drove over the gardens from the north-east, and expended its greatest fury in the direction of Richmond. The temperate house suffered the full effects, while the palm house being apparently a little to the west of its course, escaped with the destruction of 700 panes. The hailstones were found to average one and a half inches in diameter, and to weigh three-quarters of an ounce. They came down with sufficient force to bury themselves in the bare earth of the flower borders, and even penetrate the turf to the depth of an inch. In some cases perfectly circular holes were cut out of the glass panes, while the hailstones went through the succulent leaves of the *Echeverias* planted out in the beds with as clean an outline as if it had been made with a punch. On account of the confusion produced by the damage and the danger from falling splinters of glass, it has been necessary to close all the houses to the public. The present low night-temperature, and the probability of heavy showers, are grounds for the gravest anxiety as to the preservation of the collections which, however speedy the repairs of the houses, cannot fail to suffer considerable injury. The damage is estimated at not less than 2,000*l.*, as many of the houses being a good deal dilapidated, cannot be put in order without entire re-glazing, re-painting, and partial renewal, and application will have to be made to Parliament for a supplementary vote to defray the cost.

WHILE the Abbé Moigno will continue to edit *Les Mondes*, the proprietorship has been converted, he informs us, in the last number, into a sort of joint-stock company, thereby relieving him of all responsibility, and leaving him all his energy to carry on his scientifico-religious propaganda.

WE learn that the late member of the St. Petersburg Academy, Prof. Brandt, has left a mass of MSS. of great value. Among this are two important works which he has left unfinished; one on the contributions made by the St. Petersburg Academy for the advance of zoology, and a synopsis of the fauna of Russia. The MSS. will be published by the numerous friends the late Professor has left in the Academy, and by his son.

THE Royal Academy of Sciences at Munich has elected the following gentlemen as Corresponding Members of its physico-mathematical class:—Prof. Edm. Hébert (Paris), Prof. J. F. Pfaff (Erlangen), Prof. Theod. von Oppolzer (Vienna), Prof.

Ant. de Bary (Strassburg), Dr. N. Pringsheim (Berlin), and Prof. O. E. Meyer (Breslau). Dr. Felix Klein of Munich has been elected as Extraordinary Member.

THE first congress of all the German societies for the protection of animals will be held at Gotha on August 17-19 next.

THE Imperial "Leopoldino-Carolinische" German Academy of Naturalists has presented the well-known Göttingen professor of physics, Dr. Wilh. Ed. Weber, formerly one of Gauss's collaborateurs, with the Cothenius medal, in recognition of his valuable services for the furtherance and progress of experimental physics.

THE following is the prize theme given by the physico-mathematical class of the Royal Academy of Sciences of Berlin:—According to Faraday's theory of electrodynamics, as worked out mathematically by Prof. Clerk Maxwell, the generation and disappearance of dielectric polarisation in isolating media as well as in celestial space, are phenomena which possess the electrodynamical effect of electric currents, and which can be called forth like the latter by electrodynamical induction forces. The currents in question would, according to the theory, be equal in intensity to that one which charges the boundary surfaces of the conductors electrically. The Academy now demands that decisive experimental proofs be given for or against the existence of electrodynamical effects of nascent or disappearing di-electric polarisation, of the intensity supposed by Prof. Maxwell, or for or against the generating of di-electric polarisation in isolating media by means of electromotoric forces induced magnetically or electrodynamically. The term for sending in solutions of the theme ends on March 1, 1882.

ON the 1st inst. a century had passed since the birth of the celebrated naturalist and philosopher, Lorenz Oken (properly Ockenfuss). Oken was born on August 1, 1779, at Bohlsbach, in Swabia, and died on August 11, 1851, at Zurich. He had held for many years the post of professor of natural history at Jena, Munich, and Zurich. His principal works are the well-known "Lehrbuch der Naturgeschichte" and "Allgemeine Naturgeschichte für alle Stände."

RUSSIAN newspapers announce, as we stated last week, that a very rich archaeological find has been made by M. Kibalchich, in Southern Russia, on the banks of the Trubesh River, in the Government of Poltava. In a locality covered with numerous small mounds, a sheet of earth with pieces of coal, bones, broken pieces of earthenware, as well as stone and bronze implements, were discovered under the recent sands. The number of stone arrows and knives discovered is no less than 372; besides, M. Kibalchich has found two larger stone implements which were used for breaking great bones, several clay and glass ornaments, earthenware with ornaments, and five bronze arrows. This find is the first in Southern Russia, whilst, as is known, the remains of the stone and bronze periods are very numerous in Northern and Eastern Russia.

A CAPTIVE balloon has been established in Berlin, and was inaugurated on July 27. But the wind having blown with some velocity, the balloon was opened, and the occupants of the car were precipitated to the ground. A tree having diminished the shock, the travellers escaped almost unhurt. The Berlin balloon was about $\frac{1}{4}$ the size of the Paris balloon, inflated with coal gas, and the cover ordinary silk. The *Norddeutsche Zeitung* asks for police inspection before new ascents be made. The intended height was only 500 feet, and the number of passengers two or three.

ON August 30 M. Gaston Tissandier made an ascent from La Villette Gas Works with his wife and his brother. The

travellers started at 5h. and landed at 7h. 50 at Dawmartin. The observations were highly interesting. When the *National* left ground, the wind was blowing south-westerly, but at about 7h. the direction changed abruptly, and an instantaneous change took place in the direction of the balloon. It was caused by the *brise de mer* setting in after a hot day. The sky was covered with cumulus, intermixed with a few cirrus of small dimensions. When at an altitude of 600 metres, M. Tissandier passed through a cloud which was very cold indeed, as proved by the sensation which the travellers experienced, but the duration of the passage was so short that it was not possible to observe the temperature at the thermometer. When at a higher altitude M. Tissandier observed the refraction of the rays of the sun on icy particles, and at the same moment on the western sky splendid rainbows. At the same time a very large halo had been observed at Paris by the *Temps* meteorological editor, and noted by him.

DR. DUNANT publishes in the *Journal de Genève* a note on the low temperature of this summer. While the mean temperature for the years 1873 to 1878 was 18°·9 Celsius in June, and 21°·0 during the first half of July, in 1879 it was only 18°·8 and 16°·7.

THE Ramon Société of Toulouse is organising an ascent on the Pic du Midi, to inspect General Nansouty's Observatory. The peak is covered with unseasonable snow, but it will not prevent the ascent from taking place, it is expected, without any great difficulty.

A SHOCK of earthquake was felt on July 20 at 3·30 A.M. at Vulpera, in the Engadine (Switzerland). It was accompanied by a rather strong rumbling.

AN earthquake consisting of three moderately violent shocks is reported from Cairo. The phenomenon was observed in the night of July 11-12. In the quarter of Bab-en-Nasr, which is at some distance from the modern portion of the city, some isolated walls fell in, and an old and somewhat dilapidated minaret has suffered so severely that it must be taken down. During the last decades earthquakes have been extremely rare at Cairo and indeed in Egypt generally, and since the great earthquake of 1857, which caused so much damage amongst the shaky old buildings, in which the Caliph-city abounds, and through which several lives were lost, no earthquake of importance has occurred. The phenomenon of July 11-12 is said to have been noticed also at Gizeh, near the great pyramids.

THE Manila papers state that a terrible thunderstorm passed over that city on May 31. It was preceded by an almost suffocating warm atmosphere and rain, and lasted about an hour. The lightning struck the Binondo Tower, damaging the crystal shade of the clock, but not injuring the mechanism, though the stone work forming the arch was much damaged. Out of several persons in the tower at the time, four appear to have been killed. Several other places in the city were more or less injured.

WE have received from Mr. Henry Chichester Hart, B.A., a copy of his collected papers "On the Flora of North-West Donegal," which have been appearing in the *Journal of Botany*. These floras of particular districts are valuable contributions to a perfect knowledge of the British flora in general, for it is evident that a more thorough exploration of a given range can be better effected by confining the observation to a small circuit than by extending them almost indefinitely. Many points of interest in the localities of species are more clearly indicated by these contributions than we expect to find in a work which treats of the flora of the entire country. As an illustration of the utility of these papers we may refer to the fact that *Ophioglossum lusitanicum*, L., was found by Mr. Hart in August last amongst short grass near the margin of a cliff on the northern side of

Horn Head; the fronds were fertile at the time notwithstanding that the plant has been usually quoted as flowering in January. Mr. Hart further points out that the claims of this fern to a place in the British flora have hitherto rested upon its known habitat in Guernsey.

IN the June number of *The California Horticulturist*, amongst other articles of horticultural and local interest, is one on the Sierra Forests, pointing out the great risk there is of these magnificent forests becoming denuded as they "are now and for many years have been, at the mercy of private greed and public theft." The writer says it is true no changes are yet manifest, there are miles of forest left, and ravines wherein no chopper's axe has yet resounded. It is not the axe that is feared but the sheep and cattle owned by private individuals that have for years been pastured on the Government lands of the Sierras. The common practice, it is said, has been for a man having perhaps five or ten thousand head of sheep to purchase one single quarter section from the Government to build his house on, and perhaps to hold the best springs of water. From that central point his flocks and herds roam for miles, under the spicy pines and cedars, trampling the soft rich ground until it is like iron, destroying every seed, killing all the young trees, and causing the State a yearly loss in the value of her forests, which is far more than the worth of the whole band of sheep. The article concludes with a reference to the matter having occupied the attention of some of "our best thinkers." "Prof. Sargent, of Harvard," we are told, "points out in the *Nation* the disastrous effects of such a policy; Prof. Hooker, of Kew Gardens, follows in the same line of thought; and John Muir mourns over the desiccated forest-shrines, and the rarer flowers and ferns, now rapidly passing out of existence."

MESSRS. LONGMANS AND CO. have just issued a little book on "Town and Window Gardening," being the substance of a course of lectures "given out of school hours to pupil teachers and children attending the Leeds Board Schools." These lectures were given by Mrs. C. M. Buckton, a member of the Leeds School Board, and author of two recently published books called respectively "Health in the House," and "Food and Home Cookery." These endeavours of Mrs. Buckton to raise the moral and intellectual welfare of the working classes are highly praiseworthy, and though the book before us may not claim a position amongst standard scientific works, yet there is much that is good scattered through it which cannot fail to raise the tastes of many a child fortunate enough to come under the influence of teachers like the authoress who have a real admiration for nature in all its branches and a heartfelt desire to impart as much knowledge as possible to the children of our crowded alleys.

THE Tasmanian gold-fields are reported to be very successful, and some rich finds have occurred on the Pieman River. The locality is about seventy miles across country from the tin deposits at Mount Bischoff. Numbers of people are flocking to the diggings from all quarters.

THE additions to the Zoological Society's Gardens during the past week include a Weeper Capuchin (*Cebus capucinus*) from Guiana, presented by Capt. Bond; a Brown Bear (*Ursus arctos*) from Russia, presented by Mr. J. R. Boyce; a Tawny Eagle (*Aquila naeviusoides*) from Southern Spain, presented by the Marquis de la Granja; a Bateleur Eagle (*Helotarsus caudatus*) from the Isle de Bas, Sierra Leone, presented by Mr. Alex. Sinclair; two common Crossbills (*Loxia curvirostris*) European, presented by Mr. H. A. Macpherson; a Common Cuckoo (*Cuculus canorus*), British, presented by Miss C. Bealey; a Central American Agouti (*Dasyprocta isthmica*) from Central America; two White-faced Tree Ducks (*Dendrocygna viduata*), a Red-billed Tree Duck (*Dendrocygna autumnalis*) from Rio Magdalena, purchased.

SOUTH CAROLINA FOSSILS

IN a paper on "Vertebrate Remains, chiefly from the Phosphate Beds of South Carolina," published in the *Journal of the Academy of Natural Sciences of Philadelphia* (vol. viii. part iii.), Prof. Joseph Leidy prefaces his careful description of the many separate remains by a few general remarks on the subject, some extracts from which may interest our readers. The fossils are mainly from the so-called Ashley phosphate beds of South Carolina, which "are composed of sands and clays, intermingled with irregular porous masses of more coherent rock rich in calcium phosphate, together with many organic remains. These beds, the economical importance of which was fully made known in 1868 by Prof. Francis S. Holmes and Dr. N. A. Pratt, of Charleston, occupy a large extent of country in the southern part of South Carolina, on the Wando, Cooper, Ashley, Stono, Edisto, Coosaw, Asheepo, and other rivers. According to Prof. Holmes, from 'fifteen to eighteen inches may be considered the average thickness of the stratum of the phosphate rocks.'¹

"The exact stratigraphical relations of the beds and the relative age of these and contiguous strata have not been as thoroughly investigated as is desirable, and in many cases the particular horizon to which belong the fossils that have been discovered has not been positively determined. According to Prof. Holmes, the phosphate beds are of the post-pliocene period and overlies strata pertaining to the pliocene period and these are again succeeded by a soft marl rock of eocene age, the whole being covered by modern alluvium.

"The phosphatic rocks or nodular masses of the phosphate beds, said to contain as high as sixty, or even more, per centum of calcium phosphate, are of irregular shape, and range in size from small pieces up to masses of a thousand pounds or more.² They contain many casts of molluscous shells, which appear to be of the same forms as those which occur in the eocene or miocene marl rock beneath. They also frequently contain imbedded bones and teeth, mainly those of marine fishes and cetaceans.

"The phosphatic nodules are supposed to have been derived from the tertiary marl bed beneath, and are considered to be detached and altered fragments from the surface of that bed. The irregular, eroded, and porous masses have the appearance of being detached and water-rolled fragments of the tertiary marl rock after it had been tunnelled by various boring molluscs. It is, indeed, not improbable, as has been suggested, that in the later part of the eocene or miocene period and subsequently the easily penetrated rock was bored and rendered spongy by the incessant labours of multitudes of *Gastrochana*, *Petricola*, *Pholas*, &c. At the time or later, neighbouring and superficial islets, the resorts of myriads of sea-fowl, may have furnished the material which, when washed with the ocean and mingled together with the decomposing remains of marine animals, supplied the element for the conversion of the porous marl rock into the more valuable phosphatic compound.

"Besides the phosphatic nodules, the Ashley beds present a remarkable intermixture of the remains of marine and terrestrial animals, consisting of bones, teeth, coprolites, shells, &c., derived from the contiguous formations of various ages from the early tertiary to those of a comparatively recent period.

"Of remains of vertebrates, those of fishes and cetaceans prevail, especially the teeth of sharks and the vertebrae of whales. Less frequently there occur the vertebrae and teeth of large teleost fishes, the dental pavements of rays, fragments of turtle shells, vertebrae of crocodiles, ear-bones and teeth of cetaceans, bones of manatees, &c. With these likewise are found the remains of both extinct and still existing terrestrial mammals, especially teeth and bone fragments of elephant and mastodon, megatherium, horse, tapir, bison, and deer. More rarely there are found remains of hipparion, castoroides, hydrochærus, and of the smaller and more common genera of species.

"The fossils mainly consist of the harder parts of the skeleton and of teeth, usually more or less water-worn, indicating shallow seas and an active surf to which they were exposed. Many of them exhibit the drilling effects of boring molluscs, especially those which are supposed to have been derived from the tertiary marl rock, the operation of drilling apparently having been performed both before and during the time the fossils were embedded in the rock. Only enamel or the enamel-like dentinal

¹ "The Phosphate Rocks of South Carolina." By Francis S. Holmes, A.M., Charleston, 1870, p. 70.

² A nodular mass, on exhibition in the government building, from Charleston, S. C., weighs 1,150 pounds.